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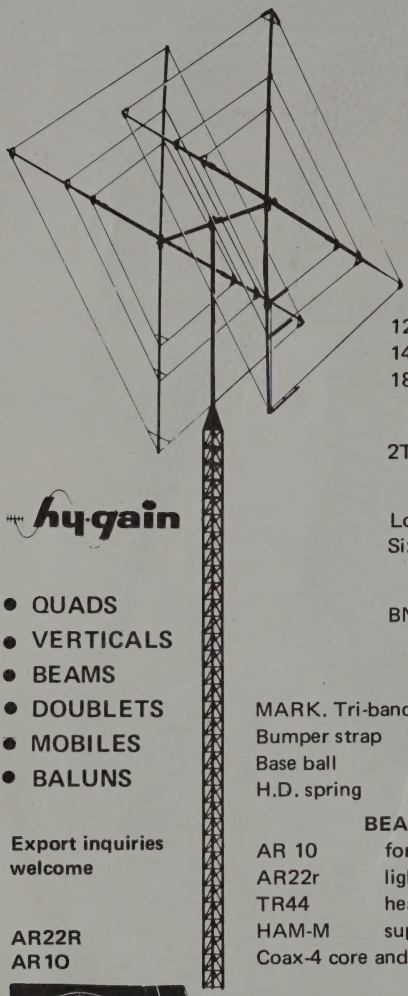

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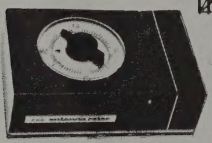

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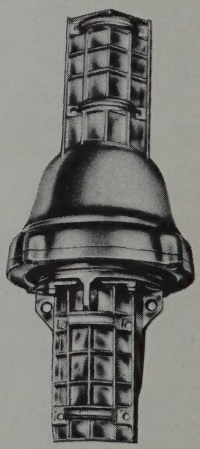

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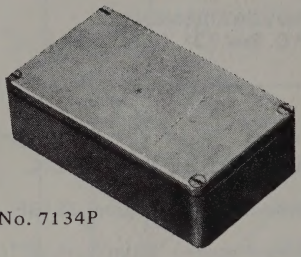

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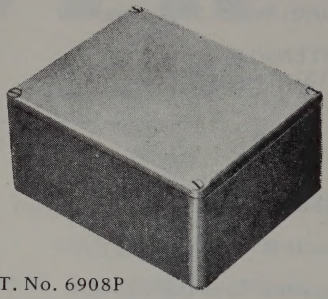

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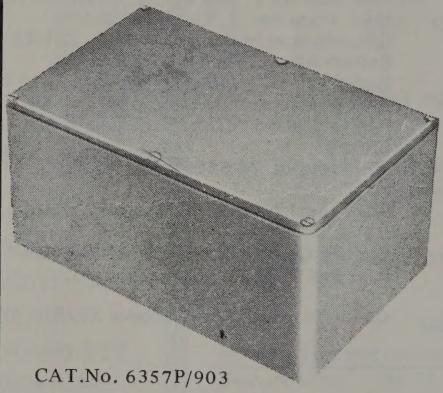

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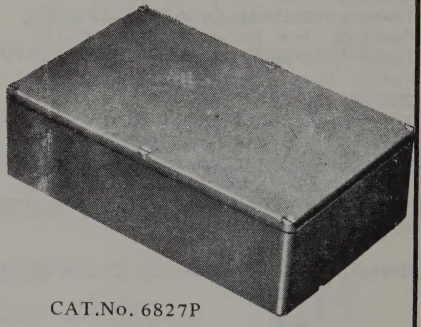

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Cover/Voorblad

Gerrit Erasmus ZS6PA showing the chairman and some of the Pretoria Branch committee the "works" inside his all band mobile.

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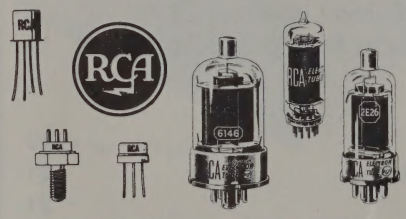

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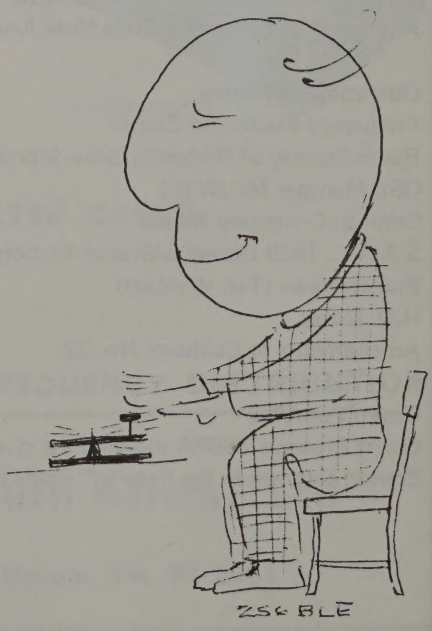


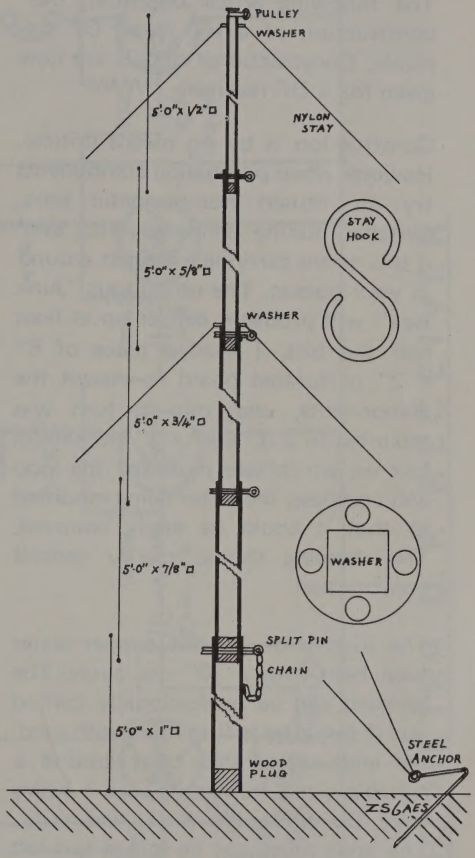
PORTABLE EXTENDING RADIO MAST

by Richie Richards ZS6ET

Pretoria Branch is very active in portable radio operation and our biggest problem has been that of suitable masts for our antennas. My also being a caravan enthusiast made me decide that something had to be done and soon.

Browsing around one of the metal sales yards, I saw some square section tubing and after doing some measuring I found that if one gets the 18 Gauge tubing; $\frac{7}{8}$" square will slide into 1" square and $\frac{3}{4}$" square into $\frac{7}{8}$" square and so on down to $\frac{1}{2}$" square into $\frac{5}{8}$" square. This tubing in usually sold in 20' lengths and so the best plan is to get three more OM's interested in the project and then go and buy four 20' lengths each of $\frac{1}{2}$" – $\frac{5}{8}$" – $\frac{3}{4}$" – $\frac{7}{8}$" and 1".

By cutting these 20' lengths each into 5' pieces 4 masts can be made up: The final overall height will be about 24' and be sure to remember to allow about 3" for each section to slide into its mate. About $1\frac{1}{2}$" down from where each section slides in drill a $\frac{3}{16}$" hole through each and insert a split pin to prevent the sections from sliding down after erection. In the top of the $\frac{1}{2}$" section fit a $\frac{3}{8}$" piece of rod to hold a pulley for hoisting the antenna. Now make a washer of about 2" diameter and $\frac{1}{8}$" thick with a $\frac{1}{2}$" square hole and on a $1\frac{1}{2}$" circle drill four holes opposite each other. This washer must be secured to the top section for the stay ropes. Another similar washer but with a $\frac{5}{8}$" square hole is needed for the second set of stays and this slides loosely over the second section from



the top. Braided nylon cord is used for the stays as it is strong and lightweight. Standard angle type wire pegs are used for the anchors and four of these are required. The medium size being quite adequate.

There are approximately 20 of these masts in use in the Pretoria Branch and these are used when the various

QSY Page 21

160 Metre DF Receiver

Peter Neveling, ZS2PD

The following article describes, the construction of a 160 meter DF Receiver. Constructional details are now given for a DF receiver.

Construction is by no means critical. However when purchasing components try to obtain non-magnetic pots., switches, tuning condenser etc., even if this means carrying a magnet around in your pocket. The ubiquitous "Junk Box" will probably deliver up at least half the bits. I used a piece of 5" x 2" perforated board to mount the components, and this in turn was mounted in a 6" x 4" x 3" aluminium box on which was mounted the loop and compass, the latter being mounted so that it could be easily removed. The drawing should clarify general construction.

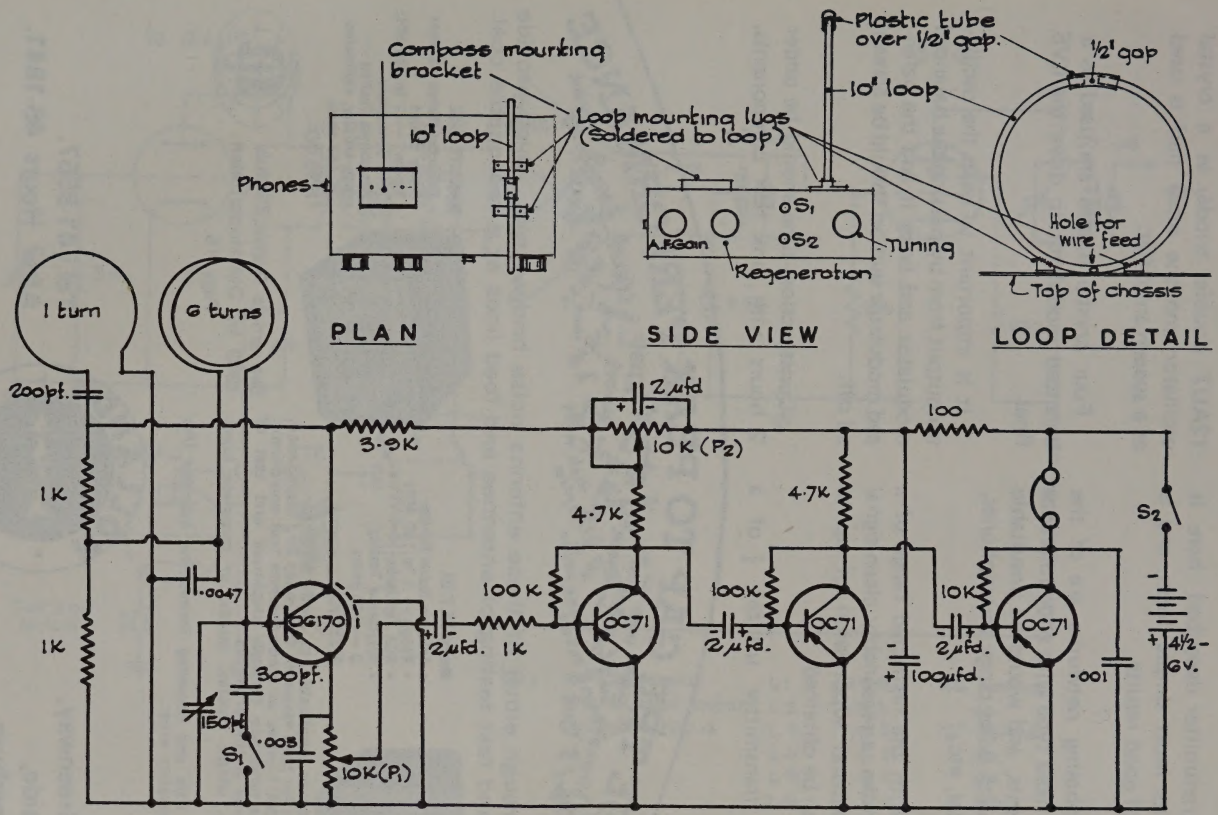
The loop is of $\frac{1}{2}$" dia. copper water tube bent into a 10" dia. circle. The bending can be professionally carried out if the tube is first filled with sand, the ends sealed then bent around a suitable sized former. (I used a heavy cake tin while the XYL was out). The ends must not be joined but left $\pm \frac{1}{2}$" apart, and covered with tape or a piece of plastic tubing. (The receiver will not work if the ends are shorted). The wires enter through a $\frac{1}{4}$" hole drilled on the outside opposite the open end.

The wiring used should preferably be plastic covered and consists of 6 turns then 1 turn threaded around the loop.

The switch marked S1 permits coverage of the broadcast bands to check operation of the set while P1 is the A.F. gain and P2 the regeneration control.

The leads to the feedback coil may have to be reversedi if the set doesn't break into oscillation as the control is advanced.

The compass must be mounted on the top of the box so that the sides of the compass are exactly at right angles to the plane of the loop. In addition the compass should be easily detachable. Check that there is no magnetic interference from the set by carefully noting whether the compass needle is deflected as the compass is slid into place. If this occurs, don't despair — a small chip of ceramic magnet positioned inside the case with glue will correct this. The best position to be found by experiment.



160 METER D. F. RECEIVER

Two Valve Complete SSB Transmitter by Danny Liebenberg ZS2PX

The transmitter described here is SSB in its most simple form, and is capable of good results.

The phasing networks are of the simplest fixed type with wide tolerance components, and would be unsuitable for use with wide range microphones, i.e. crystal, etc.

But with the restricted range of a carbon mike, a reasonably clean signal with sideband suppression of up to 30 db can be obtained.

The transmitter utilizes $\frac{1}{2}$ of a 12AU7 double triode as a crystal oscillator and the other half is used as a speech amplifier.

Four crystal diodes are used as a balanced modulator to drive the 6V6 final.

It is important to keep the oscillator output from by-passing the balanced modulator and both it and the balanced modulator section should be screened off.

Construction time should be under 2 hours with junk box components.

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See article Radio ZS July 1969 by OM Hoogstraten Page 15.

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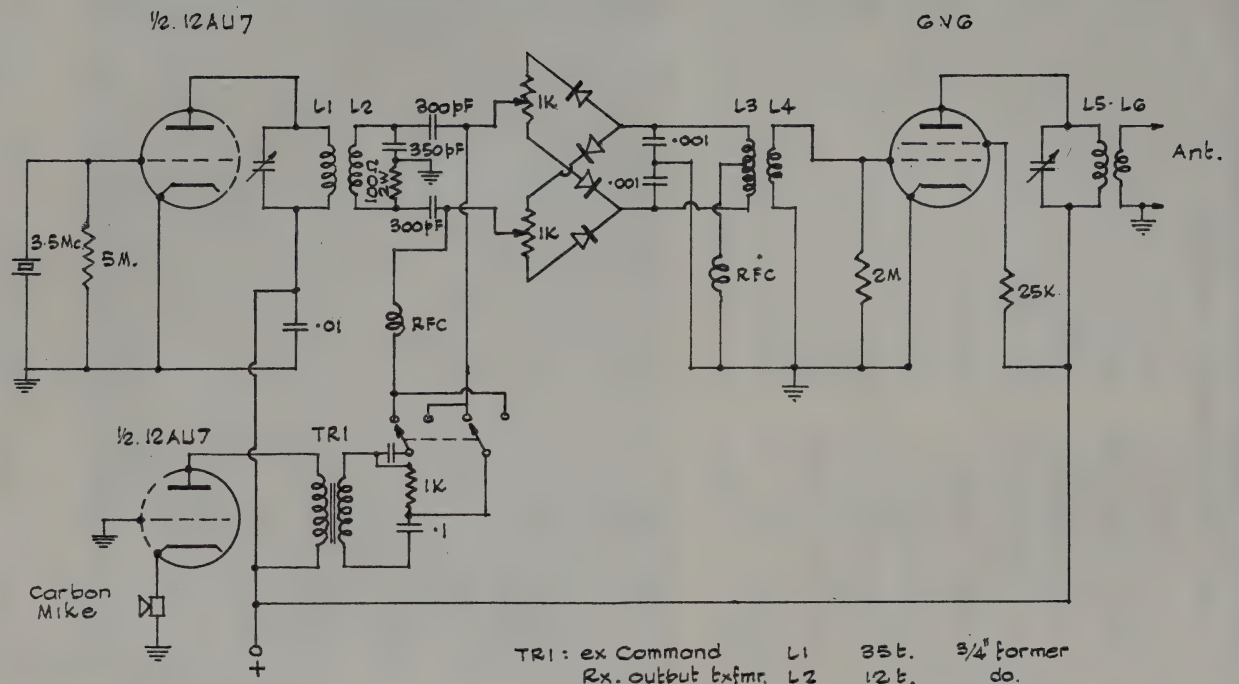

TR1 : ex Command Rx. output txfmr. output ± 600 Ω

L1	35 t.	¾" former
L2	12 t.	do.
L3	16 t.	2" former
L4	6 t.	do.
L5	16 t	do.
L6	2 t.	do.

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DETERMINING TRUE NORTH ACCURATELY WITHOUT INSTRUMENTS OR ALMANACKS

D. R. W. HUTCHINSON M(SA)IERE

So, by keeping the XYL's dress allowance down to its 1967 level for the last two years, and by adopting other subterfuges such as buying Junior a compendium of indoor games instead of the bicycle he wanted for his birthday, you have managed to accumulate sufficient folding money to acquire the very latest Multielement, Multiband, Multideebee Beam with Ultra-precision Rotator and Control Unit and now it is safely installed on the top of the windpump tower which has been in your backyard ever since you bought the plot in 1952. The fact that the windpump itself has had to be dismantled and you are having to ferry two old fifty gallon oil drums down to your neighbours plot for water every day to keep your household supplied and that the oil drums you chose still contained trances of their original contents is by the way — after all dieseline flavoured tea is quite novel and hasn't dieseline got a high sulphur content — so a trace in your tea must be good for you. You are quite sure that you will be able to modify the gearbox of the old gas engine you've had in the garage for the last six years to drive the pump sometime in the next six weeks — a plan you've had in mind for the last six years, ever since you bought the engine "voetstoots" at the auction.

Now comes the 64000 Rand question — not "What do you do for fun? " — the prize for a correct answer to that one is only an ashtray — but "Where is North? " The usual answer is "Poffader Street runs approximately East and West, so North must be somewhere over there! " Accuracy ± 20 degrees. Magnetic compass? I have known the magnetic axis of the needle on a cheap compass to be 5 degrees or more out of alignment with the geometric axis. Additionally, the compass is influenced by the proximity of large ferrous masses such as the galvanised iron roof of your house. Even assuming that you have a good compass and no large masses of iron nearby, once you have found magnetic north you can only find true north if you know the magnetic deviation for your area. You can find this on the large scale government survey map for your area (if you can first find the map) but the figure given is likely to be several years old so an annual correction factor has to be added or subtracted. Now the magnetic pole has a habit of wandering along an east to west course for a few years and then reversing and wandering back in west to east direction. So if your map is a few years old, the period may include an about turn in the peregrinations of the magnetic pole and the correction factor given on the map will have changed polarity (plus or minus) since the map was printed. Accuracy of the compass method may be as poor as ± 10 degrees. In the Northern hemisphere, the Pole Star is always exactly due north, with the Plough, Charles' Wain or the Great Bear (or whatever pet name you have for the constellation Ursa Major) always there to help you find it (when there are no clouds) but have you ever tried to fix the point in what seems to be a hole in the sky where the South Pole star would be if there was one by using the guide lines which are supposed to be given by the Southern Cross? I, for one, can never

remember which two stars to use. Astronomy can provide some reasonably accurate methods however. It is a fact that the sun, besides having occasional attacks of measles which affect DX, moves through the sky at a rate of 15 degrees an hour and when it is highest in the sky, in the Southern Hemisphere below the Tropic of Capricorn, is due north. (I slipped in that bit about the Tropic of Capricorn to forestall any ex-mariners or people of that ilk and to save them the bother of writing letters to Radio ZS pointing out my omission). The exact time when this high point occurs is not always precisely at noon by local mean time because the earth's orbit is eliptical and the sun's apparent course is not along the celestial equator. The effect and extent of this variation is clearly explained in a very good artlicle on "How to Make a Sundial" by V.S. Gilbey, which appeared in the May 21st 1969 issue of "Farmers Weekly". If you ignore these variations and calculate noon local mean time on the basis of 4 minutes before or after noon S.A. Standard time for every degree of longitude you are east or west of 30°E your maximum bearing error will be ± 4 degrees. Incidentally, do not look at the sun to take your bearing. Push a straight rod into a level piece of ground and the shadow will be north-south at local noon. The next time the sun will be exactly north at noon local mean time is September 3rd, so if you like to take a day off work (it is a Wednesday) you can ensure maximum accuracy if you have a timepiece of chronometer standard. You needn't wait till then

(Photo: Pine Studios)

"TIGER" HART and the 1st Hillcrest Scout Troop gather for the 12th "Jamboree of the Air". Although conditions were bad and few overseas contacts were made, the troop sent and received messages from all over Southern Africa through ZS5DO.

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and you can dispense with the chronometer if you use the shadow cast by a vertical rod and can determine when the shadow is shortest. Unfortunately, the rate of change in the length of a shadow becomes very small as noon approaches and it is difficult to tell just when that moment occurs. If you plot the curve produced by the end point of the shadow for a period before and after noon you will find that the curve is very flat when the shadow approaches its shortest length. All the methods described above, except the last, presuppose the possession of such exotic things as prismatic compasses, chronometers and almanacks. The method I am going to describe below, again utilizing the shadow cast by a rod, requires only the rod (a long knitting needle will do), a piece of thin string, a nail or pencil and a level surface. It can be used anywhere in the world where the sun shines (G readers can use it on either of their summer days).

I think my method is original — I have discussed it with several colleagues of more or less scientific bent and they find it novel — I have certainly never seen it in print. The theory behind it goes like this. The length of a shadow cast by a thin vertical rod at time t before local noon will be exactly the same length as the shadow cast by the same rod at time t after local noon and the line bisecting the angle produced by the two shadows from the base of the rod, will lie exactly north-south. From this can be derived a method which will give true north in which no exact measurement is required. You don't have to know how long the rod and its shadow are, nor do you have to have a watch, let alone a chronometer.

Start an hour or so before noon (the earlier the better). Find a level piece of ground — I levelled an area about 3 feet square in an empty flower bed — and push the rod into the centre of the side nearest the sun so that it casts a shadow across the levelled area. For real precision, check that the rod is vertical with a plumb line. Mark where the end of the shadow falls. Make a loop in one end of the string and slip it over the rod and tie the large nail or pencil to the other end of the string so that it can be used to describe an arc across the level piece of ground. Now go away and see what's happening on 15 or 20 for an hour or so, but keep checking to see whether the afternoon shadow has reached the line of the arc. As soon as it does, mark the point where it touches the arc. The two points marked on the arc and the base of the rod form the angle to be disected. This is done by moving the rod first to the point at the end of the morning shadow, describing a small arc with the nail or pencil remote from the point where the rod was originally pushed in, then moving the rod over to the point at the end of the afternoon shadow and making a second small arc to cut the first. A straight line drawn between the point where these two arcs intersect and the point where the base of the rod was originally will lie north-south. The accuracy of the bearing will depend on the accuracy of your geometrical construction but should be at worst ± 2 degrees. In the Southern Hemisphere, below Capricorn, north will be towards the original position of the rod and vice versa in the Northern Hemisphere above Cancer. In the tropics it will depend on the time of the year, but you should have *some* idea of where north is — the final line will lie north-south, but you will have to work

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A METHOD FOR EVALUATING SLIDE RULE ANSWERS

N. B. de Jong ZS1MM

The most difficult part with slide rule calculations is how to evaluate the answer after a series of calculations. Some slide rule users mentally calculate where the decimal point should be but this takes a lot of practice and it is easy to make a mistake. The method described here accurately evaluates the answer after a series of calculations. With this article it is assumed that the reader knows how to set the slide rule. The instructions sold with the slide rule explains how to set the slide rule, and the positions of the various scales.

With this method only the lower scales are used, - the lower C scale on the slide and the lower D scale on the stock and a point to remember is that the values, of, for instance, 00.0041,0.041,0.41,4.1,41,410.4100 etc all lie on the 4.1 graduation of the C or D scales and similarly 0.00114,0.0114,0.114,1.14 and 114 etc will all be on the 1.14 on the C or D scales.

Multiplication

1. First add all the digits in the quantities to be multiplied — figures before the decimal point as +1,2 or 3, the decimal only as 0 and zeros after the decimal point as -1,2 or 3 etc.

Example — 214.5 x 0.456 x 0.002

\+ 0 -2

Total +3 +0 -2 = +1.

or 343 x 2.1 x 5

+3 +1 +1 +3 + 1 + 1 = +5

2. While multiplying subtract 1 from the digit total everytime the slide projects to the righthand side. The digit total remains unaltered when the slide projects to the left.

Example: 2 x 3 Digits +1 +1 Total +2. Set 1 on scale C to 2 on scale D and below 3 on scale C read 6 on scale D. Slide projects to the right and 1 must be subtracted from digit total leaving +1 in digit total. The answer is thus 6.

Example — 4x3 digits +1 +1 Total +2. Set 10 on scale C to 4 on scale D and read below 3 on scale C,1.2 on scale D. The slide projects to the left and the digits remain unaltered. The answer is thus 12. Example: 214.5 x 0.456 x 0.002 Digits +3 0 -2 Total +1.

Set 1 on scale C to 2.145 on scale D, read 9.8 on scale D under 4.56 on scale C, move centre line of cursor to 9.8 on scale D and set 10 on scale C to cursor centre line, read 1.96 on D under 2 on scale C. With the first setting the slide projected to the right and 1 must be subtracted from the digit total and with the second setting the slide projected to the left leaving the digit total unaltered. The digit total is thus original +1 -1 = 0. The answer is thus 0.196.

Division

1. Add all the digits in the divisor and subtract it from the digit total in the dividend.

Examples: $\frac{12}{3}$ Digit total +2 -1 = +1,

$\frac{4}{3}$ Digit Total +1 −1 = 0

$\frac{120}{20}$ Digits +3 −2 = +1

$\frac{8}{0.2}$ Digits +1 −0 = +1

$\frac{9}{0.03}$ Digits +1 −(−1) = +1 +1 = +2

$\frac{17}{0.005}$ +2 −(−2) = +2 +2 = +4

$\frac{0.008}{0.07}$ −2 −(−D = −2 +1 = −1

$\frac{0.009}{3}$ Digits −2 −1 = −3

2. With division 1 must be added to the digit total everytime the slide projects to the right. When slide projects to the left digit total remains unaltered. Examples: $\frac{21}{7}$ Digit total +2 -1 = +1.

Set 7 on scale C to 2.1 on scale D and under 10 on scale C read 3 on scale D. Slide projects to the left digits remain the same the answer is thus 3.

$\frac{21}{2}$ digit total +2 -1 = +1.

Set 2 on scale C to 2.1 on scale D and read under 1 on scale C,1.05 on scale D. Slide projects to the right and 1 must be added to digit total making it +2, the answer is thus 10.5.

$\frac{0.021}{2}$ Digit total -1 -1 = -2.

Set 2 on scale C to 2.1 on scale D and read under 1 on C,1.05 on scale D. Slide projects to the right and 1 must be added to the digit total making it -1, answer is thus 0.0105.

Combined multiplication and division.

There are two methods which can be used.

1. The dividend and the divisor can be multiplied separately and then divided.

eg: $\frac{2.31 \times 8.4 \times 0.002}{1.89 \times 0.003 \times 5.3}$ digit total +1

$\frac{+1\ -2 = 0}{-2\ +1 = 0.} = \frac{0.0388}{0.03}$ Digits -1 -(-1) = 0.

Dividing 0.0388 by 0.03 gives a reading of 1.29 on the slide rule, the slide projects to the right and 1 must be added to the digit total making it +1 and the answer is thus 1.29.

2. The process can be continuous. Add up all the digits in the dividend and the divisor and subtract the divisor digits from the dividend digits, then divide and multiply alternately, subtracting from the digit total while multiplying when the slide projects to the right and adding to the digit total while dividing when the slide projects to the right.

Eg. $\frac{2.31 \times 8.4 \times 0.002}{1.89 \times 0.003 \times 5.3}$ Digit total +1

$\frac{+1\ -2 = 0}{-2\ +1 = 0}$ Total 0 – 0 = 0.

Divide 2.31 by 1.89 = 1.225 on scale D, slide projects to right 1 must be added to digit total. Move cursor centre line on to 1.225 on scale D and set 10 on scale C to cursor centre line and multiply with 8.4 = 1.025 on scale D, slide projects to left digit total remains unchanged. Move cursor centre line to 1.025 on scale D and divide with 3 on scale C = 3.43 on scale D, slide projects to left no change in digits, Move cursor centre line to 3.43 on D and set 1 on scale C to centre line of cursor and multiply by 2 on scale C = 6.85 on scale D, slide projects to right and 1 must be subtracted from digit total. Set centre line of cursor to 6.85 on D and divide with 5.3 on scale C = 1.29 on scale D. Slide projects to the fight add +1. Total digits to be added with slide movement = +1 -1 +1 = +1. Thus +1 Added to the original digit total is 0 +1 and the answer must be 1.29.

The above written explanation looks very complicated but in practice it is very simple, the digit total is written down and everytime the slide projects to the right, 1 is added or subtracted from the total, depending on whether the operation is multiplication or division.

A small X -1 and a $\div$ +1 can be scratched on the right hand side of the stock or the slide as a reminder to add or to subtract from the digit total.

The Heathkit HW-100 Five-Band SSB-CW Transceiver

Solid-state (FET) VFO — 80-10 meter coverage — Switch selected upper or lower sideband or CW — 180 watts input PEP SSB.
Crystal filter — Full coverage on all bands with 500 kHz per band segment.
—Smooth vernier control of frequency with patented dial mechanism — built-in 100 kHz calibrator — Separate offset CW carrier crystal — TALC — Quiet, enclosed relays — Fixed or mobile operation with HP-23 or HP-13 power supplies — Easy assembly with circuit boards and wiring harness.

Designed To Leave The Rest Of The Field Behind . . . in performance, in price, in value. You can check the specs. and be impressed, but in general, the HW-100 operates with a hybrid circuit that uses 20 tubes (26 functions),,two transistors (one an FET for the VFO), six germanium diodes, nine silicon diodes, and one Zener diode. Everything but the VFO, final amplifier, and various controls mount on nine circuit boards for stable, dependable, easy-to-build circuitry.

Here's what it delivers. The receiver portion of the HW-100 has a sensitivity figure of less than $\frac{1}{2}$uv for a 10 dB S+N/N ratio for SSB operation Crystal filter selectivity is 2.1 kHz at 6 dB down, 7 kHz at 60 dB down. Image and IF rejection better than 50 dB.
The transmitter section in SSB continuous duty is 180 watts PEP. It operates PTT or VOX on SSB, and CW transceive is provided by operating VOX from a keyed tone, using grid-block keying. CW side-tone is 1 kHz, internally switched to speaker or headphones. Carrier and unwanted sideband suppression is 45 dB down; third order distortion 30 dB down, RF compression (TALC) is 10 dB or better. Frequency stabiltiy is outstanding . . . less than 100 Hz drift per hour after 30 minute warmup . . . less than 100 Hz variation under a 10% line voltage variation.

Easy To Build. Most components mount on 9 circuit boards and the one wiring harness makes interconnection simple and fast. For the best value and performance in sideband, make the HW-100 your rig now!

A Pleasure To Use . . . the tuning provides 28 revolutions of the knob per 500 kHz band segment, with 2kHz divisions. A zero reset button is adjacent. To the left are the Band Selector switch, Mode selector, Load and Final tune, Driver preselctor, Mic/CW Level control Mic connector, and Phone jack. To the right is the S-Meter with a 3-position switch for checking ALC, Relative Power, and Final plate current. Adjacent is another 3-position switch for PTT, VOX and Calibrate. RF gain and AF gain controls complete the front panel. Located inside are controls for Meter Zero, Bias, VOX sensitivity, VOX delay, Anti-Trip, Carrier Null, and Neutralizing. On the rear apron are the CW key jack, 8 ohm speaker output, ALC input, Power/Accessory plug, RF output, and Antenna connector.

Kit HW-100	R260.00
Kit SB-600, 8 ohm speaker,	22.50
Kit HP-13, DC power supply,	70.50
Kit HP-23A, AC power supply,	65.35

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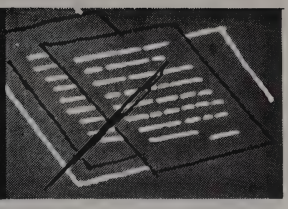
letters to the editor



21 Ruhr Street,
Sasolburg.
10/11/69.

The Editor,
Radio ZS.

Dear Sir,

It would seem as if a large number of amateurs have been troubled with "Hi-Fi" interference.

As I have had some interesting experience with this type of interference, I though that I would pass them on to you.

Case No. 1 concerned a transistorized F.M. tuner and amplifier. A separate turntable completed the installation. This set-up would receive O.M. Ron ZS4PN, loud and clear even when the amplifier power was switched off and the power cable unplugged from the wall power socket! No control on the amplifier including the volume control would have any effect on the volume. of the interference. When power was applied to the amplifier no increase in volume took place. The S.S.B. interference would come through on the speakers even when the turntable was on and a record was playing.

The owner of the set could see that the fault must lie with the amplifier and the suppliers of the Hi-Fi equipment were contacted. The suppliers promplty told the owner that the fault was the radio amateur's.

We in turn suggested that the matter should be reported to the P.M.G., whereupon the suppliers started taking somewhat more interest in the matter. A service man was sent to look at the Hi-Fi installation.

After switching on the set and tuning around, the service man declared that there was nothing wrong with the Hi-Fi installation which, was as he put it, "built to specification," whatever that meant. This "test" by the way, was done while we were off the air. The owner of the Hi-Fi set asked the service man to stay while he would ask one of us (ZS4PN & ZS4BH) to come on the air, so that the nature of the interference could be heard by the service man.

The service man declared that that would not be necessary as the fault surely lay with the amateurs, whereupon, he duly took his leave.

So much for the amount of interest shown by the suppliers. Luckily the Hi-Fi addict had not yet paid for the outfit and took it back in exchange for another make. This proved to be entirely free from interference of any sort.

Case No. 2 had the same symtoms. Same make, same setup. The suppliers were contacted once more and the same procudure took place, i.e. service man testing etc, declaring set "built to specification", amateurs at fault, owner suggesting that service man chat to

amateurs about matter, service man saying "not necessary". Matter still not settled.

Case No. 3 Hi-Fi set belonging to O.M. Ron ZS4PN. Interference on all modes, i.e. gram, shortwave, F.M. Interference not tunable. Bypass capacitors fitted to all speaker leads and power leads at chassis. All interference eliminated. Price 60c.

The moral of the story is that this type of interference can be eliminated. But — the amateur should not work on any hi-fi set other than his own. Should things go wrong it would be so easy to blame the amateur. Rather let us point out to the suppliers (if they will listen) that this problem can be overcome and how to do it.

Another interesting point that I would like to mention is this:- Amateurs should be careful about radiating harmonics which could fall in the F.M. bands. Beware of multiband antennas which have inadequate harmonic suppresssion. Always use a low pass filter of which many descriptions can be found in the handbook. For multiband operation a Transmatch and open wire feeder still takes a lot of beating for efficiency and harmonic attenuation. Operate coaxial cable with low standing wave ratios.

The 7th harmonic of the 14 mc band falls in the middle of the F.M. band, and the 5th harmonic of the 21mc band falls in the high end of the F.M. band.

Now, another interesting point for this area (Johannesburg and Vaal Triangle) is this:- Many F.M. programmes can be received in two places on the dial of any F.M. receiver. This could be due to poor receiver design, or, they could be images, or in fact two transmissions (or harmonics). When listening to Springbok Radio there are two positions on the dial where this programme can be received. These are approximately 100mcs and approximately 98 mcs. Now, the higher frequency i.e., 100 mc is very susceptable to 14 mc harmonic radiation, while on the lower frequency, 98mc, no interference can be picked up no matter where in the 14mc band the transmitter is tuned to. A few people have had interference of this nature on their F.M. sets but a low pass filter on the transmitter and tuning to the lower frequency on the F.M. Receiver has solved this problem. Perhaps someone can tell me why there are two Springbok frequencies and why interference only takes place on the higher frequency.

However, all other complaints about interference have been those mentioned in cases 1, 2 and 3. The notes about the two Springbok frequencies have been a series of tests conducted by myself.

To test what sort of interference problem anybody may have, the following points should be borne in ming.

1. If the interference is there when the Hi-Fi equimpent is playing records, (and this is the major cause of all complaints) the cure is very simple. Bypass the speaker leads (4 if a stereo outfit) to ground by means of .01 mf disc ceramic condensors. In like manner do the power leads. Be sure the capacitors can handle the voltage! Bypassing the speaker leads prevents any R.F. energy from getting into the feedback loop of the amplifier, thereby being amplified in the power stages. Note that this will not affect the audio quality at all.

It stands to reason then, that if the interference is coming in via the amplifier the interference will also be heard on shortwave and F.M.

2. If the interference only comes through on the F.M. bands check your transmitters harmonics and install a low pass filter. Check to see if the F.M. Receiver is tuned to the correct frequency or a harmonic or what have

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AMATEUR FREQUENCY BAND SELECTION CHART
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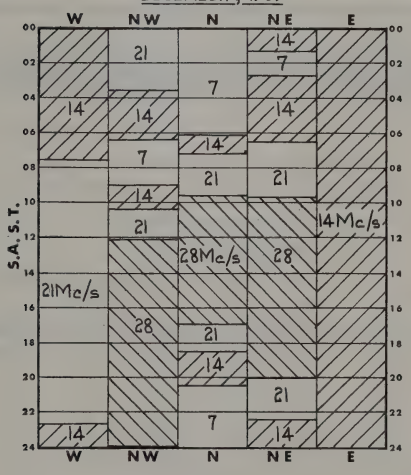
IN DIFFERENT DIRECTIONS FROM JOHANNESBURG
DECEMBER, 1969



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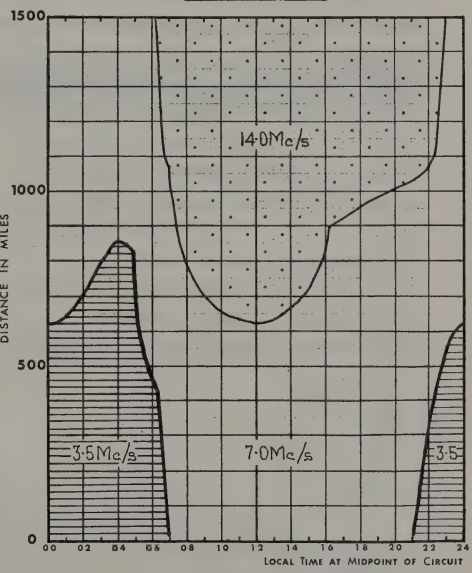
C.S.I.R.

AMATEUR FREQUENCY BAND SELECTION CHART
FOR SOUTHERN AFRICA
DECEMBER, 1969



NATIONAL INTITUTE FOR TELECOMMUNICATIONS RESEARCH,
C.S.I.R.

you. Tuning to another frequency will clear it up (at least in our area).

I would like to point out that all complaints that I have had have been of the kind mentioned in No. 1.

To conclude I would like to say just a few more words. It seems as if the suppliers of Hi-Fi equipment are not particularly interested in solving this problem.

I work in a factory where a lot of sophisticated electronic equipment is used. In many cases the suppliers of this equipment know very little about the working of this apparatus and when problems present themselves they are usually the last people to be able to repair any faults.

Along these same lines one fact has also shown itself to me, and this is that a lot of old fashioned, outdated equipment is dumped into the South African market. Most of this equipment could not, and would not be sold in countries overseas.

Let us hope that when television is introduced into this country no outdated sets are sold here. I hope that the Government will take strict measures to ensure that this does not take place, and also that all sets sold should meet up to a minimum specification. One Specification should be proper design to eliminate as much as possible all types of interference including amateur radio interference, which in many cases is a direct result of poor T.V. receiver design.

And I hope that this minimum specification should extend into all fields including Hi-Fi equipment.

Yours faithfully,

E. Schulze, ZS4BH.

Plantation Dauphin,
P.O. Box 70-B,
Port-au-Prince,
Haiti,

South African Radio League,
QSL Bureau,
P.O. Box 3037,
Cape Town.
S. Africa.

Dear Sirs,

I am very sorry to have to advise the following stations that the QSO's mentioned on the cards were not made with HH9DL in Haiti. Someone outside of Haiti has been using the call for reasons unknown to me.

I regret the situation very much.

Yours very truly,

D. J. Lungwitz — HH9DL

	Date	Wkd	Mc	Mode
ZS10	Feb 11'69	HH9DL	21	CW
ZS20B	Feb 27'69	HH9DL	21	CW
ZS2RM	Dec 28'68	HH9DL	14	A1
ZS5XA	Feb. 7'69	HH9DL	28	CW
ZS5FE	Dec 29'68	HH9DL	14	CW
ZS5LB	Feb 10'69	HH9DL	28	CW
ZS6JK	Feb 25'69	HH9DL	21	CW
ZS6JK	Feb 25'69	HH9DL	21	A1
ZS6HR	Dec 29'68	HH9DL	21	CW
ZS6NH	Nov 14'68	HH9DL	28	CW
ZS2NS	Oct 30'68	HH9DL	21	A1

motor rallies are run and during "Saamtreks" and Field Days. A centre fed dipole is used on the band being operated arranged in an inverted "V" configuration. Two masts with the dipole can, of course, be used if you have the energy or what have you to make a second mast.

If you want a higher mast, section of $1\frac{1}{16}$" square + $1\frac{1}{8}$" square can be added to the bottom and for more rigidity the top $\frac{1}{2}$" square can then be left off. Remember, square tubes must be of 18 Gauge otherwise they will not fit into one another.

It is well worth your while to plug the bottom of each tube with a wooden plug for a distance of about 2". This is to prevent the sections from sliding right through, and also provides a 2" projection on top to grip when extending the mast. Secure each split pin to the top of its section with a short length of chain if you want to save yourself a few unnecessary grey hairs looking for split pins in the veld or dark.

RADIO SOCIETY OF RHODESIA SLOW MORSE CLASSES

A number of amateurs and listeners in South Africa have been copying the slow morse classes transmitted by ZE1JBY. These classes terminated on the 19th September, 1969.

The response this year was most encouraging, and it is possible that they will be continued next year, commencing about May.

The Rhodesian contest committee thanks all ZS amateurs who reported in after the evening classes. These reports have been most helpful.

QSL MANAGER FOR JW1CI

I have assumed QSL-managership for JW1CI from his first QSO at Bear Island and will remain such till his return to Norway next summer. My own correct address is shown at the top of this letter. This address must be used because my address in the callbook isn't correct. It will however be corrected in the next issue of the CB. I hope that those of you who are looking for Bear Island will have a QSO, JW1CI, Age, is active mostly on all bands both CW and SSB from a FT DX-500.

John-Erik Roth, LA9BL, Box 26, N2059, TRANDUM, NORWAY.

COOK BI-CENTENARY AWARD

To mark the occasion of the 200th anniversary of the discovery of the eastern coast of Australia by Captain Cook in the year 1770, the Wireless Institute of Australia is issuing a Special Award to be known as the "Cook Bi-Centenary Award". It will be available free to any licensed Radio Amateur throughout the world who, during 1970, makes two-way radio contact with the required number of Australian Amateur Stations as set out below.

1970 is also the 60th anniversary of the founding of the Wireless Institute of Australia, the Australian Amateur body which has served the interests of Radio Amateurs since 1910 and is the world's oldest Radio Society.

Because of the special significance of the year 1970, a new prefix will be available for use by Australian Amateurs between 1st January and 31st December, 1970. At the option of the station operator during this period, the VK prefix may be replaced by the special AX prefix.

AWARD RULES

Operation.—Only Australian Amateur Stations using the special AX prefix may be worked for the purpose of this award. Contacts may be made on any band or mode available to Australian Amateur stations. Cross-band operation will not be permitted. No contacts made with ship or aircraft stations in Australian Territories will be eligible, but land mobile or portable stations may be contacted provided the location of the station worked, at the time of the contact is clearly indicated. Operators at all times must operate within the terms of their station licence. All contacts must be made during the period 1st January to 31st December, 1970, inclusive. Contestants may work each station once only during this period for the purpose of this award.

Requirements

Overseas Applicants.-Stations outside Australian Territory must contact 50 different Australian Amateur Stations using the AX prefix during the abovementioned period.

AX Applicants.-Stations within Australia must contact 100 different Australian Amateur Stations using the AX prefix, working the required number of stations in each Call Area as per the list below, during the specified period:

AX1	(VK1)	3 Stations
AX2	(VK2)	30 "
AX3	(VK3)	30 "
AX4	(VK4)	11 "
AX5	(VK5)	11 "
AX6	(VK6)	6 "
AX7	(VK7)	4 "
AX8	(VK8)	1 "
AX9	(VK9)	3 "
AX0	(VK0)	1 "
Total		100 Stations

Applicants.-Stations applying for the Award are not to forward QSL cards, but instead should submit a list of the stations worked (in order of Call Sign by Call Areas) plus the following details of each contact: Date, time (G.M.T.), band, mode, report. This list, certified by two other licensed Amateurs plus a statement to the effect that they have sighted the log entries of the applicant, should be sent to:

Awards Manager, W.I.A.,
P.O. Box 67,
East Melbourne,
Victoria.
Australia, 3002.

S.A.R.L. 1969 CONTESTS BRANCH PARTICIPATION

	Total Logs	Qualifying Logs	% to Membership
Pietermaritzburg	39	38	60.3
S.W.A.	12	12	31.6
Johannesburg	40	37	20.6
Highveld	11	11	18.0
Durban	24	22	11.3
Pretoria	10	9	10.7
South Coast	2	2	8.3
Cape Town	15	15	7.1
Port Elizabeth	5	5	6.3
Kaffraria	3	2	5.7
W. Transvaal	2	2	5.3
N. Johannesburg	5	5	5.0
East London	3	2	3.8
East Rand	2	2	3.4
Boland	3	3	2.7
S. Transvaal	2	1	2.4
West Rand	2	1	1.9
Tygerberg	0	0	
E. Transvaal	0	0	
N. Transvaal	0	0	
Vrystaat	0	0	

Total Logs include Check Logs and Entries received too late for inclusion in Results of Individual Contests.

Applications should be clearly marked "Cook Award" on the back of the envelope containing the check list plus the full postal address to which the award is to be sent. All applications are to be received at the above address no later than 31st December, 1971, as no further entries will be accepted after this date.

Certificates will be forwarded free of charge by surface mail. However, if airmail return is required, eight IRC coupons must be included to cover the extra cost involved.

S.A.R.L. – TAK VRYSTAAT

Sedert verlede jaar vergader die Tak Vrystaat se lede net eenmaal per kwartaal.

Ons jongste kwartaalvergadering is verlede Saterdag (18 Oktober) in die Shell-saal, Bloemfontein, gehou. Daar was 'n verassende opkoms van vyftien amateurs – sommige vergesel van hul wederhelftes en kinders. Ongelukkig was daar geen verteenwoordiger van die Kroonstad klub nie.

Die volgende sake is bespreek: C.Q. – Hou Koers, Mikrofonix, hulp aan voornemende amateurs werving van nuwe lede vir die Tak en die Liga.

Die volgende kwartaalvergadering word te Allemanskraaldam gehou op Saterdag, 22 November. By die geleentheid sal ons ook die jaarlikse kersboomfunksie laat plaasvind. Ons verwag 'n goeie opkoms by hierdie sentraalgeleë vakansie-oord.

Verlede Saterdag se vergadering is afgesluit met 'n eetmaal wat baie byval gevind het. Die dames wat verantwoordelik was daarvoor, Mevv. Pietie van Niekerk, Niek du Toit en Chris Beneke, is hartlik bedank deur die Vise-Voorsitter, O.K. Niek, ZS4DE.

PIETIE – ZS4JZ.

A.J.V. MOSIES:

Lede en takke wat mosies will voorlê vir bespreking op die volgende A.J.V. moet onthou dat sulke mosies Hoofkantoor moet bereik nie later nie as 31 Desember 1969. Hoofkantoor posbus word op 31 Desember gelig en mosies wat later aankom sal nie op die Agenda van die A.J.V. verskyn nie.

A.G.M. MOTIONS:

Those members and branches who wish to put forward motions for discussion at the next Annual General Meeting should remember that any such motions hsould arrive at Headquarters office not later than the 31st December. The Headquarters Post Office Box will be cleared on the 31st and any motions which arrive after that date will not be on the Agenda of the A.G.M.

NOMINASIES VIR DIE RAAD:

Nominasies word ingewag vir 4 vakatures op die Raad. Drie sal vir 'n tydperk van 3 jaar wees en een vir 'n tydperk van 2 jaar. Die volgende drie Raadslede tree met die A.J.V. uit die Raad en mag weer genomineer word:-

Mev. A.H. v. d. Merwe, ZS1AZ
Mnr. E. H. Rhodes, ZS1R
Mnr. J. G. Gerryts, ZS1VA

Die reëls wat die prosedure van nominasie voorskryf moet in ag geneem word wanneer nominasies gemaak word. Dit is Reëls 121, 122 en 123.

COUNCIL NOMINATIONS:

Nominations have been called for to fill the four vacancies on Council. Three of these will be for a three year period and one for a two year period. The following three Councillors will retire at the A.G.M. and are all eligible for nomination:

Mrs. A. H. van der Merwe ZS1AZ
Mr. E. H. Rhodes, ZS1R
Mr. J. G. Gerryts, ZS1VA

The following rules which control the nomination of candidates for Council should be considered when nominations are being made. Rule 121, 122 and 123.

STEURNIS OP DIE BANDE:

As gevolg van toenemende steurnis op die bande wat gebruikers van die moderne tipe transistor en "solid state" ontvangstelle die meeste tref, waarvoor die eienaars maar alte graag die blaam op die amateur afskuif, is die Raad deur een van die takke versoek om 'n ondersoek na die oorsake in te stel, deur die lede waargeneem, en om dit dan te korreleer in 'n poging om steurnis te verhoed.

'n Ondersoek van so 'n aard sal baie nuttig wees en mag genoeg inligting oplewer om die optrek van standaarde vir die konstruksie van radio-ontvangstelle vir tuisgebruik te regverdig. As voldoende inligting beskikbaar word

vir die bewys van die noodsaaklikheid van beter beskutting en beskerming teen steurnis, in die konstruksie van ontvangstelle vir tuisgebruik, kan sodanige inligting aan die Buro van Standaarde aangestuur word en aan die Posmeester Generaal vir amptelike optrede.

Enige lede of takke wat gewillig is om so 'n ondersoek te onderneem word gevra om hulle bevindings aan Hoofkantoor te stuur vir ko-ordinasie en vir voorlegging aan die P.M.G. en die Buro van Standaarde.

B.C.I.

As a result of the increasing amount of B.C.I. which is suffered by users of the modern type of transistor and solid-state receivers and for which the owners are too prone to blame the radio amateur, your Council has been asked by one of our branches to initiate and co-ordinate some research by our members into the causes and possible cures for this type of B.C.I.

An investigation of this nature would be very useful and could produce sufficient information to justify the production of standard rules for the construction of domestic radio recievers. If sufficient evidence could be produced of the need for better shielding and protection against interference in the construction of domestic radio receivers this could be forwarded to the Bureau of Standards and the Postmaster General for official action.

Any members or branches who are prepared to carry out such investigations should forward their findings to Headquarters for co-ordination and submission to the P.M.G. and S.A. Bureau of Standards.

BRANCH COMMITTEE

At the Annual General Meeting of the Pietermaritzburg Branch held on 20th August the following committee was elected for the ensuing year:
Chairman: Basil Lanyon-Paul ZS5IF
Vice-Chairman: Rolf Lindeque ZS5WJ
Hon. Sec./Treas. Daan Truter, ZS5KD
Members: Ken Yule ZS5DI
Neville de Gruchy, ZS5UM
Charles Gregory ZS5KS

To the new Committee we offer our congratulations on their election and our best wishes for a happy and fruitful year of office. To the retiring Committee we offer our thanks for all their efforts on behalf of their branch and our League.

REMEMBRANCE DAY SERVICE

A sincere word of thanks goes to the Rev. Leo Alexander, ZS6BEN, for the inspiring Remembrance Day Service conducted by him on the 9th November, 1969, at 10.40 a.m. The League is grateful for the courtesy extended to us by the S.A.B.C. who give us the opportunity to broadcast a service in memory of our Silent Keys. Thank you, as well, to those amateurs who were responsible for the relays on the amateur bands.

HERDENKINGSDIENS:

'n Woord van hartlike dank gaan aan Ds. W.B. Smith, ZS4WB, vir die inspirerende boodskap aan ons gerig in die Herdenkingsdiens op 9 November 1969, om 2.15 n.m. Ook ons hartlike dank aan die S.A.U.K. wat so tegemoetkomend is om ons die geleentheid te gee om 'n diens te reël ter gedagtenis aan die Sleutels wat Stil geword het. Dankie ook aan die amateurs wat die herleidings op die amateurbande gedoen het.

NUWE LEDE: NEW MEMBERS:
We welcome the following members to our ranks and hope that they will enjoy many years of membership:-

Ons verwelkom die volgende lede in ons midde en hoop dat hulle baie jare van lidmaatskap sal geniet:

ZS5SU, W. A. Arnold, Durban Branch.
ZS5-024, S. P. L. Visagie " "
ZS4-006, M. J. Le Grange, Tak Vrystaat.
—, W. L. Mundell, Port Elizabeth Branch.
ZS6-161, P. H. Favoreel, Johannesburg Branch.
ZS6-162, Miss Anna Theys, Johannesburg Branch.
ZS6-163, E. Paravalos, Johannesburg Branch.
ZS3-047, J. L. K. Kunneke, S.W.A. Branch.
ZS4-007, M. O. Jerling, Tak Vrystaat.
ZS4-008, C. P. Coetsee, " "
ZS1UU, T. J. Wileman, Cape Town Branch.
ZS1-029, E. J. Sanby, " " Branch.
ZS1-031, G. A. de Villiers, " " Branch.
ZS1-033, M. Blumberg, " " Branch.
ZS1-034, S. Kasimov, " " Branch.
ZS1-035, E. M. Simpson, " " Branch.
ZS1-040, H. D. Peters, " " Branch.
ZS4MJ, M. J. (Giel) Jonker, Tak Vrystaat.
ZS4BH, E. Schulze, Southern Transvaal Branch.
ZS6-BCQ, M. G. Eckard, Tak Noord Transvaal.
ZS6-518, J. G. van Niekerk, " " Transvaal.
— Lubos Kalousek, Associate.
ZS6-ASN, M. Ross, Johannesburg Branch.
ZS6-160, M. B. Ussher, Johannesburg Branch.
ZS1WR, J. C. Olivier, Tak Boland.
ZS1KC, H. V. D. Westhuizen, Tak Boland.

73
ZS1AZ

QSY Page 13

out which end is which. The illustration, which is a plan view, shows. you what the procedure looks like.

I extended the line I scratched on the flower bed on to the adjacent garden path with a line of paint to give me a semi-permanent indicator, If you would like a more permanent record, cast a small slab of concrete before you start and use that as your level surface, smoothing out all the construction marks and leaving the north-south line, which you can embellish as you think fit. If you haven't got a garden, the procedure can be carried out on any level flat surface — an odd piece of plasterboard on a table near a window for instance — but if you do use a loose level surface make sure that it doesn't move at any time during the operation. If it does you will have to start again.

Well, now you know just where north is, so you can set up your beam and be reasonably sure that you know where it is pointing 73's and good DX hunting.

AMENDMENTS TO CALLBOOK NO. 22

ZS1DO	J. P. Malan – silent key – deceased.
*ZS1EP	E. R. du Plessis, Posbus 71, OUDTSHOORN. K.P.
*ZS1KC	H. van der Westhuizen, Isalangi, STILBAAI WES. K.P.
*ZS1SD	S. Boersma, Radio Stasie, KLIPHEUWEL. K.P.
*ZS1UD	U. W. Dehning, 35 Belleview Street, Kloof Nek. Cape Town
*ZS1UU	T. J. Wileman, 28 Van Arkel Street, BOTHASIG, Cape
*ZS1WR	J. C. Olivier, Postmaster, NABABEEP.
*ZS2AJ	Alan J. Ansell, 12 Balsam Street, Linton Grange, PORT ELIZABETH.
*ZS2EJ	A. J. Hislop, 18 Steyn Avenue, Rosemount, EAST LONDON.
ZS2NA	Neill Bakkes, Posbus 210, QUEENSTOWN.
*ZS2NG	M. J. (Giel) Jonker) – delete, see ZS4MJ.
*ZS2WD	Woody Damp, 15 Neville Street, Mangold Park, PORT ELIZABETH.
*ZS2WE	Mrs. D. Damp, 15 Neville Street, Mangold Park, PORT ELIZABETH.
*ZS4BH	E. Schulze, 21 Ruhr Street, SASOLBURG. O.F.S.
*ZS4MJ	M. J. (Giel) Jonker, p/a Posmeester, ODENDAALSRUS.
*ZS5AZ	L. Riekert – delete – see ZS6AZL
*ZS5RB	R. Mansfield, P.O. Box 164, Hillcrest, NATAL.
*ZS5SU	W. A. Arnold, should read 50 Bowker Road, ESCOMBE.
*ZS5TA	Norman E. Pocock, P.O. Box 29, Matatiele, EAST GRIQUALAND.
*ZS5WD	E. Schulze – delete – see ZS4BH.
*ZS6AGL	Alan J. Ansell – delete – see ZS2AJ
*ZS6ASN	M. Ross, 9–6th Avenue, Parktown North, JOHANNESBURG.
*ZS6AZL	L. Riekert, Posbus 1074, VANDERBIJLPARK, TVL.
*ZS6BEY	D. J. Lighthelm, P.O. Box 118, West Krugersdorp, TVL.
*ZS6BIF	Mrs. E.E.A. Davis, P.O. Box 6337, JOHANNESBURG.
*ZS6DE	A. G. Davis, P.O. Box 6337, JOHANNESBURG.
*ZS6EC	C. McCormick – silent key – deceased.
*ZS6KT	Dirk T. Fourie, c/o Stilfontein Gold Mining Co. Ltd., P.O. Box 1, STILFONTEIN. TVL.
ZS6RZ	W. M. (Mike) Morrison – silent key – deceased.
*ZS6XD	W. F. Thomas, P.O. Box 1253, VANDERBIJLPARK.
*ZE1CZ	L. B. Wilkinson, 51A Pickering Street, Newton Park, PORT ELIZABETH.
*7P8AR	U. W. Dehning – delete – see ZS1UD.

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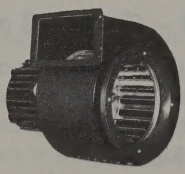
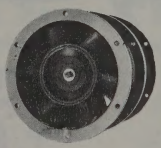

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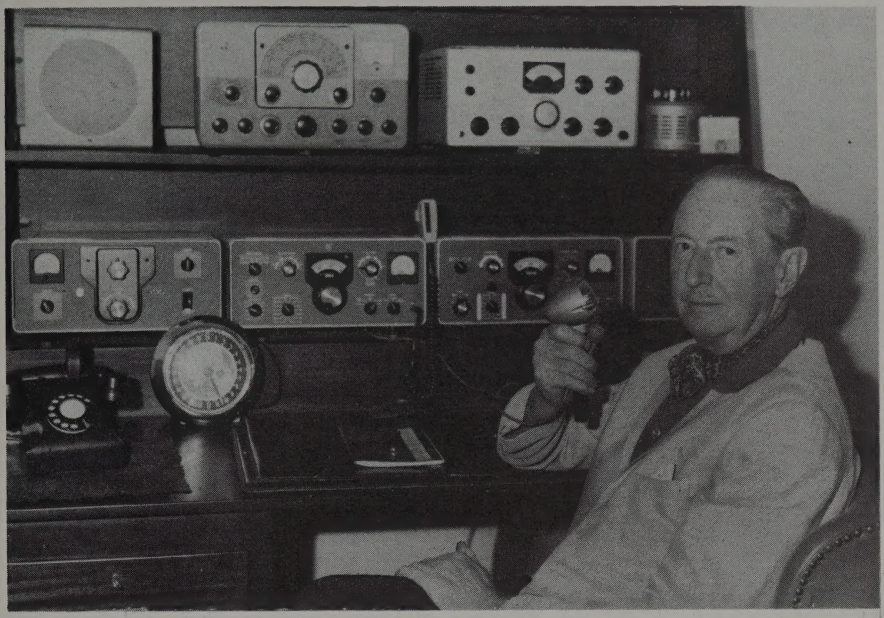

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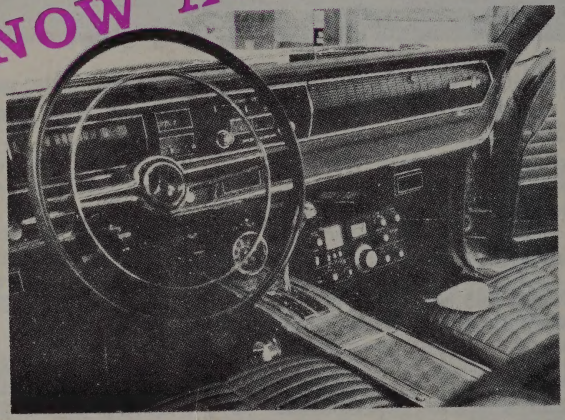

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